

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Francis W. Daly, Jr. Attorney Docket No. H000-1-1126
Serial No.: 10/823,951 Group Art Unit: 2857
Filing Date: April 13, 2004 Examiner: GUTIERREZ, A.
Title: WEATHER INCIDENT PREDICTION

RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF

TO THE COMMISSIONER OF PATENTS:

AMENDMENT AND RESPONSE

Sir,

Pursuant to the Notice of Appeal dated December 19, 2005, and the Notification of Non-Compliance with the Requirements of 37 CFR 11.37(c) dated February 9, 2006, please enter the following Substitute Appeal Brief:


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(1) REAL PARTY IN INTEREST

The real party in interest is Honeywell International, Inc., 101 Columbia Road, PO. Box 2245, Morristown, NJ 01962, the assignee of record of the entire interest of the above captioned application.

(2) RELATED APPEALS AND INTERFERENCES

No other appeals or interferences are known to either appellant or the appellant's legal representative which will directly affect or be directly affected by or have a bearing of the Board's decision in the pending appeal.

(3) STATUS OF CLAIMS

Claims 1 and 3-38 are pending and stand rejected.

Claims 1 and 3-38 are appealed.

(4) STATUS OF AMENDMENTS

The status of the amendment filed subsequent to final rejection is that the amendment has been entered.

The Applicant has incorporated said amendment in the Appendix of Claims attached hereto.

(5) SUMMARY OF THE CLAIMED SUBJECT MATTER

In the invention as presently claimed, an apparatus and method for predicting the future state of a weather condition relative to an aircraft are disclosed. The claims of the present invention are to methods and electronic circuits implementing that predict future

weather relative to the threat posed to the safety of flight. Preferably, a warning is generated as a function of a forecast intensity of a storm cell as compared with an intended phase of flight at predicted intersection of the aircraft with the storm cell Figs. 7 and 9 illustrate embodiments of the method and apparatus, respectively. See, e.g., Summary of the Invention at page 12, lines 13-29; see, also, Specification at page 18, lines 19-28.

The method and apparatus determine two or more gradations of threat and generate different warning signals as a function of such gradations of threat...See, e.g., Specification at page 18, line 29-page 19, line 31.

The method and apparatus determines gradations of threat as a function of storm cell intensity and phase of flight. See, e.g., replacement paragraph beginning at page 12, line 22 as set forth in Preliminary Amendment filed on April 13, 2004, at page 2, and new paragraph beginning at page 19, line 16 as set forth in Preliminary Amendment filed on April 13, 2004, at pages 2-4.

The invention of amended independent Claim 1 is a method for predicting the future state of a weather condition relative to the threat posed to the safety of flight, the method including forecasting information describing a weather condition relative to an aircraft, retrieving a phase of flight of the aircraft, and generating a warning as a function of comparing the weather condition forecast information and the aircraft phase of flight. (Page 21, lines 3-17; page 15, lines 1-34)

The invention of dependent Claim 3 is the method of claim 1, including forecasting an intensity of a storm cell sufficient to threaten safety of flight, and generating a warning as a function of a predicted intersection with the storm cell threatening to the safety of flight. (Page 16, lines 9-18)

The invention of dependent Claim 4 is the method of claim 1, including determining a coincidence of the aircraft and the weather condition. (Page 18, lines 19-28) The invention of dependent Claim 5 recites a further limitation to the method of Claim 4 as retrieving a flight path of the aircraft and comparing the flight path with a location of the weather condition. (Page 21, lines 3-17) The invention of dependent Claim 6 recites a further limitation to the method of retrieving a flight path of the aircraft of Claim 5 as

retrieving an intended phase of flight at coincidence of the aircraft and the weather condition, and also recites a further limitation to the method of generating a warning as generating a warning as a function of the weather condition forecast information and the intended phase of flight at coincidence. (Page 21, lines 18-23)

The invention of dependent Claim 7 recites a further limitation to the method of generating a warning of Claim 6 as generating a warning both as a function of determining an intensity of the weather condition at coincidence, and comparing the intensity of the weather condition with the intended phase of flight of the aircraft at coincidence. (Page 21, lines 18-23)

The invention of dependent Claim 8 is the method of claim 1 reciting a further limitation to the method of forecasting information describing a weather condition relative to an aircraft as forecasting information describing a track of the weather condition. (Page 14, lines 24-31) The invention of dependent Claim 9 recites further limitations to the method of Claim 8 as further including the steps of accessing a flight path of the aircraft; comparing the forecast track of the weather condition with the flight path; and predicting a coincidence of the flight path and the weather condition. (Page 14, lines 24-31) The invention of dependent Claim 10 recites further limitations to the method of Claim 9 as further including the step of generating an alert as a function of the coincidence of the flight path and the weather condition. (Page 21, lines 3-17)

The invention of dependent Claim 11 is the method of claim 3 reciting a further limitation to the method of comparing the weather condition forecast information and the phase of flight as determining a threat to the safety of flight as a function of the forecasted intensity of the storm cell as a function of an intended phase of flight of the aircraft at the predicted intersection with the storm cell. (Page 21, lines 18-23)

The invention of dependent Claim 12 is the method of claim 8 reciting a further limitation to the method of forecasting information describing a weather condition as forecasting a weather radar image representative of the weather condition relative to the aircraft; and reciting a further limitation to the method of displaying information describing the forecast track of the weather condition as displaying the forecast weather radar image 204(Page 17, lines 13-21).

The invention of independent Claim 13 is a method for predicting the future position and intensity of a weather condition relative to an aircraft using a weather radar resident on-board the aircraft, the method including spatially and temporally mapping first and second weather radar images, predicting and displaying a future track of a weather condition as a function of the first and second weather radar images, retrieving a phase of flight of the aircraft, and determining a potential threat to the safety of flight and a severity of the potential threat as a function of comparing the weather condition and the aircraft's phase of flight. (Page 21, lines 3-17; page 15, lines 1-34; page 18, lines 3-18)

The invention of dependent Claim 14 is the method of Claim 13 reciting the further limitations of retrieving a stored flight path of the aircraft, comparing the flight path with the predicted future track of the weather condition, and determining a coincidence of the flight path and the weather condition. (Page 18, lines 19-28) The invention of dependent Claim 15 recites a further limitation to the method of Claim 14 as generating a warning as a function of the coincidence of the flight path and weather condition. (Page 21, lines 18-23)

The invention of dependent Claim 16 recites further limitations to the method of Claim 15 as further limiting the first and second weather radar images as being respective first and second images representative of the weather condition; further limiting the step of comparing the first and second weather radar images as comparing first and second states of the weather condition; and recites a further limitation of forecasting a future state of the weather condition. (Page 14, lines 13-24) The invention of dependent Claim 17 recites further limitations to the method of Claim 16 as further limiting the retrieving a phase of flight of the aircraft as retrieving an intended phase of flight of the aircraft at the coincidence of the flight path and weather condition; and as further limiting determining a potential threat to the safety of flight as determining a potential threat to the safety of flight as a function of the future state of both the weather condition and the intended phase of flight. (Page 21, lines 18-23)

The invention of dependent Claim 18 recites further limitations to the method of Claim 17 as further limiting the generating a warning as being a function of the potential threat to the safety of flight. (Page 14, lines 24-31) The invention of dependent Claim 19

recites further limitations to the method of Claim 18 as further limiting the displaying of the predicted future track of the weather condition as displaying one or more of a future position and a future intensity of the weather condition. 204(Page 17, lines 13-21)

The invention of independent Claim 20 is a method for using an electronic circuit to predict the future position and intensity of a weather condition relative to an aircraft using a weather radar resident on-board the aircraft, the method including using the electronic circuit for referencing first and second recorded weather radar images to a common physical location, analyzing the first and second weather radar images, predicting a future track of one or more weather cells as a function of analyzing the first and second weather radar images, generating a signal representative of the predicted future track of the weather cells. Additionally, the method invention of independent Claim 20 includes displaying the predicted future track of the weather cells, and using the electronic circuit for accessing an intended flight path of the aircraft, accessing a phase of flight of the aircraft, predicting a coincidence of the intended flight path and the weather condition and determining a potential threat to the safety of flight as a function of comparing: the coincidence of the intended flight path, the phase of flight, and the weather condition306 (Page 15, lines 1-34; page 17, lines 13-21; page 18, lines 3-28; page 21, lines 3-17):

The invention of dependent Claim 21 is the method of claim 20 reciting the further limitation of the step of predicting a coincidence of the intended flight path and the weather cells as using the electronic circuit for comparing the predicted future track of the weather cells, with the intended flight path. (Page 14, lines 13-24). The invention of independent Claim 22 is an electronic circuit for use with a. weather radar system to predict the future state of a weather condition relative to an aircraft, the electronic circuit having a memory 308 for storing a plurality of machine instructions, a. processor 306 coupled to receive a signal representative of a phase of flight of the aircraft and further coupled to the memory for accessing the plurality of machine instructions, the processor accessing a phase of flight of the aircraft and executing the plurality of machine instructions to implement a plurality of functions, the functions including: accessing a first weather radar image generated relative to the aircraft; accessing a second weather radar image generated after the first weather radar image and having a similar

relationship to the aircraft as the first weather radar image; referencing the first weather radar image to the second weather radar image; comparing the first and second weather radar images; forecasting as a function of the first and second weather radar images information describing a weather condition represented by the first and second weather radar images; and generating a warning as a function of comparing the phase of flight and the information describing a weather condition represented by the first and second weather radar images. (Page 15, lines 1-34; page 17, lines 13-21; page 18, lines 3-28; page 21, lines 3-17)

The invention of dependent Claim 23 is the electronic circuit of Claim 22 reciting a further limitation of the plurality of functions as generating a video signal representative of the forecast weather condition information. (Page 17, lines 13-21)

The invention of dependent Claim 24 is the electronic circuit of claim22 reciting a further limitation of the processor as being further coupled to receive from a flight management computer a signal representative of the aircraft's intended flight path. Claim24 also limits the machine instruction for forecasting information describing a weather condition as forecasting a future track of the weather condition; and further limits the plurality of functions as including functions for comparing the forecast track of the weather condition with the intended flight path, and predicting a coincidence of the intended flight path and the weather condition. (Page 17, lines 13-21)

The invention of dependent Claim 25 is the electronic circuit of Claim 22 reciting a further limitation of the forecasting information describing a weather condition as forecasting a state of the weather condition at or about the coincidence. (Page 14, lines 13-24)

The invention of dependent Claim 26 recites further limitations to the electronic circuit of Claim 25 as further limiting the function of generating a warning as generating a warning signal as a function of the coincidence, the phase of flight, and the state of the weather condition at or about the coincidence. (Page 21, lines 18-23)

The invention of dependent Claim 27 recites further limitations to the electronic circuit of Claim 26 as further limiting the processor is as being coupled to receive from a flight management computer 104a signal representative of the aircraft's intended phase of

flight at or about the coincidence; and further limits the function of generating a warning signal as being further a function of the intended phase of flight. (Page 21, lines 18-23)

The invention of dependent Claim 28 recites further limitations to the electronic circuit of Claim 27 as the electronic circuit being further limited by inclusion of a weather radar unit being coupled to the processor.

The invention of independent Claim 29 is an electronic circuit for coupling to a weather radar system on-board an aircraft to display weather information and forecast weather data relative to a phase of flight of the aircraft, the processor including a weather radar processor that is adapted to receive first and second weather radar return signals from a receiver portion of a weather radar system that is resident on-board an aircraft and to convert the first and second weather radar return signals into first and second weather radar image signals representative of weather information relative to the aircraft that is contained in the weather radar return signals; a memory that is coupled to the processor and that is adapted to receive and store the first and second weather radar image signals; a weather incident prediction function that is operated by the processor and is coupled to the memory to receive first and second different ones of the stored weather radar image signals the weather incident prediction function being adapted to forecast future weather information relative to the aircraft as a function of the first and second stored weather radar image signals, and, being adapted to generate a signal representative of the future weather information; and a threat prediction function that is operated by the processor and is coupled to receive a signal representative of a phase of flight of the aircraft and the signal representative of the future weather information, the threat prediction function being adapted to compare the future weather information and the phase of flight and to predict a threat to the safety of flight as a function of the comparison. weather radar systems" because "Most of the wind shear detection weather radar system's components are similar to typical airborne weather radar systems with turbulence detection capability." Applicant argues above that, by teaching disabling the weather detection mode during the landing and take off phases of flight, and only enabling the wind shear detection mode during landing and takeoff phases of flight, Kuntman teaches exactly away from generating a warning as a function of forecast information describing a

weather condition and said phase of flight; as recited in claim 1. Rather, as taught by Kuntman, weather detection and wind shear detection are different and mutually exclusive operations of the weather radar. . (Page 15, lines 1-34; page 17, lines 13-21; page 18, lines 3-28; page 21, lines 3-17)

The invention of dependent Claim 30 is the electronic circuit of claim 29 reciting a further limitation of the storage of the weather radar image signals as being a function of time; and reciting a further limitation of the storage of the forecast of future weather information relative to the aircraft as also being a function of the time. (Page 14, line 32; page 16, line 8) The invention of dependent Claim 31 recites further limitations to the electronic circuit of Claim 30 as further limiting the future weather information as being information describing both a predicted future intensity and a predicted future track of one or more weather cells described by the weather information contained in the weather radar return signals. (Page 18, lines 19-28) The invention of dependent Claim 32 recites further limitations to the electronic circuit of Claim 31 as further limiting the signal representative of a phase of flight of the aircraft as being a signal representative of an intended phase of flight of the aircraft. Claim 32 also recites further limitations to the weather radar processor of Claim 31 as being further adapted to receive a signal representative of an intended flight path of the aircraft. Claim 32 also recites further limitations to the weather incident prediction function of Claim 31 as being further adapted to predict a coincidence of the intended flight path and one or more of the weather cells. Claim 32 also recites further limitations to the threat prediction function of Claim 31 as being further adapted to predict the threat the coincidence as a function of the predicted future intensity of the one or more of the weather cells and the intended phase of flight at coincidence. (Page 21, lines 18-23)

The invention of dependent Claim 33 recites further limitations to the electronic circuit of Claim 31 as further limiting the weather radar processor as being adapted to receive a signal representative of an intended flight plan of the aircraft; and recites further limitations to the weather incident prediction function as being further adapted to

predict a coincidence of the intended flight plan and one or more of the weather cells.

(Page 21, lines 18-23)

The invention of dependent Claim 34 is the electronic circuit of claim 29 reciting a further limitation of the weather radar processor as being further adapted to generate a warning signal as a function of the threat prediction function. The invention of dependent Claim 35 recites further limitations to the electronic circuit of Claim 34 as further limiting the weather radar processor as being further adapted to determine two or more gradations of threat and to generate the warning signal as a function of the two or more gradations of threat. (Page 14, lines 24-31) The invention of dependent Claim 36 is the electronic circuit of claim 29, further including a display that is coupled to the processor and is adapted to receive each of the weather radar image signals representative of weather information contained in the weather radar return signals and the signal representative of the future weather information, the display being a screen that is adapted to display each of the weather information contained in the weather radar return signals and the future weather information. (Page 17, line 22; page 18, line 2) The invention of dependent Claim 37 recites further limitations to the electronic circuit of Claim 36 as further limiting the processor as being further adapted to generate weather radar transmission signals. Claim 37 also recites further limitations to the electronic circuit of Claim 36 as having a transmitter that is coupled to receive the weather radar transmission signals from the processor, and to output the weather radar transmission signals to radar antenna; and having a receiver that is coupled to receive weather radar return signals from a radar antenna, and to output the received weather radar return signals to the processor. (Page 20, lines 11-26)

The invention of dependent Claim 38 is the electronic circuit of claim 29 reciting a further limitation of the threat prediction function as being further adapted to determine a severity of said threat to the safety of flight as a function of said comparison of said future weather information and said phase of flight. (Page 19, lines 24-31)

(6) GROUNDS OF REJECTION TO REVIEWED ON APPEAL

1) Claims 1 and 3-37 are rejected under 35 USC § 103(a) as being obvious over US Patent 5,974,360 to Otsuka, et al. in view of US Patent 5,615, U8 to Frank, and further in view of US Patent 5,077,558 to Kuntman.


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REMARKS

A Notification of Non-Compliant Appeal Brief was mailed February 9, 2006. Applicant hereby attaches an amended appeal brief in order to address the discrepancies noted in Paragraphs 1, 4, and 10 of the notification.

With regard to Paragraph 8 of the Notification, Applicant submits that no evidence or affidavits are included with this appeal brief.

With regard to Paragraph 9 of the Notification, Applicant refers to Section 2 of the Appeal Brief.

In the Appeal Brief, on page 14 of the old Appeal Brief, at the very top, the 2nd line, please remove the word "is" and on page 28, where the signature comes, please change the appendix to be in Section 10 and insert a new section right before that called (9) Evidence Appendix.

Notice evidence is being submitted at this time.

CONCLUSION

Respectfully submitted,

BLACK LOWE & GRAHAM^{PLLC}

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